



..... THIS MONTH
WE'RE HARVESTING
Leafy Greens!

In This Issue



AND MORE!

Farmer Spotlight

**JACK SHIYOMURA - DOLE FRESH VEGETABLES
HURON, CA**

Jack Shiyomura has been farming for over 50 years, and had an exceptionally early start. "In fifth grade, my uncle recruited me to help with his farm. From that point on, I spent all my free time irrigating peaches and almonds. I liked that I could make money; I could save money," explained Shiyomura. Today, Shiyomura runs his own farming operation which, depending on the season, includes up to 900 acres of romaine and iceberg lettuce southwest of Fresno.



Huron is one of three growing locations for the leading lettuce producer, Dole Fresh Vegetables. "For two weeks out of the year, Huron is supplying all the nation's lettuce. We are a transitional growing region, which means the climate in Huron is a perfect bridge between Dole's production seasons in Salinas and Yuma, Arizona," said Shiyomura.

Shiyomura begins planting lettuce in November for a spring harvest, and in August for a fall harvest. "We actually plant three varieties, in waves, during each

planting season. Each variety is timed for Huron's climate as the weather changes," he explained. The tiny lettuce seeds are mechanically planted in rows on raised beds.

After seeds are successfully in the ground, Shiyomura uses sprinkler and drip irrigation throughout the crop. Water conservation is crucial, as agricultural water in the Fresno region has become scarce. "Drip irrigation has allowed us to use less water, and monitor our water use closely. Even with conservation methods, our production is severely limited by water availability," said Shiyomura.

For the spring crop, harvest begins in March. The fall crop is harvested in October. Harvest crews use a knife with an angled tip to cut the lettuce head at the base before they pack it into boxes in the field. Iceberg lettuce is wrapped in plastic, while romaine heads are secured with a twist tie. Lettuce destined for value added products, such as bagged salad mixes, are cored (removing the inner portion of the head) and packed in bins before being shipped to Dole's processing facilities around the country. "Lettuce is perishable, which means it has to move quickly to remain fresh. Within days, our lettuce is shipped around the world for consumers to enjoy."

FOOD for FUEL



Leafy greens provide unique health benefits. They are full of essential vitamins and a natural source of beneficial antioxidants.

HERE ARE SOME OF THE
HEALTH BENEFITS OF INCLUDING LEAFY GREENS IN YOUR DIET:

Healthy BONES & BLOOD

Collard greens are one of the best sources of vitamin K—one cup of cooked collard greens contains 1,045% of the recommended daily value. Vitamin K helps make various proteins that are needed for blood clotting and building strong bones.

Immune System SUPPORT

Spinach provides antioxidants tied to anti-inflammation and disease protection. These include kaempferol, a flavonoid shown to reduce the risk of cancer, as well as slow its growth and spread.

Happy GUT

The fiber content of romaine lettuce makes it a good supplement for a healthy digestive tract. Romaine lettuce contains 2 grams of fiber per serving, about 5% of the recommended daily value.



LUCKY LEPRECHAUN SMOOTHIE

With naturally sweet fruit and tender baby spinach leaves, this kid-friendly green smoothie is a simple way to add dye-free green to your St. Patrick's Day menu. Some kids might be less than excited to try leafy greens for the first time, but a fruit-filled smoothie in a bright green hue might be just the trick to increasing the veggies in their diet.

Ingredients:

- 4 cups baby spinach
- $\frac{3}{4}$ cup milk or vanilla soy milk
- $\frac{1}{2}$ cup pineapple juice
- 1 cup frozen mango chunks
- 1 banana
- 1 tablespoon ground flaxseed (optional)

Tools: Blender, measuring cups and spoons, cups and paper straws

Directions:

1. Wash your produce under running water. Pat dry with paper towels.
2. Combine the spinach, soy milk, and pineapple juice in a blender. Cover; blend until smooth, scraping down the sides as necessary.
3. Add mango chunks, banana, and flaxseed. Cover; blend until smooth.
4. Fill cups, add a paper straw, and enjoy. (Keep an eye out for leprechauns, they can't resist these things!)

(Adapted from dolesunshine.com)



Photo source: vibrantplate.com



Rainbow Leaves

up the stem to the leaves, and phloem tissue is responsible for transporting sugars made in the leaves during photosynthesis to the rest of the plant. In this hands-on science experiment, students will observe how xylem and phloem work.

Materials: Several different types of whole-leaf leafy greens (kale, lettuce, chard, spinach), plastic cups or jars (several per group), water, food coloring, and student worksheet (page 3).

Procedure:

1. Read the mini book, *Leafy Greens: Too Good To "Be-Leaf."* Show students a leaf and help them identify the margin, apex, veins, midrib, and petiole. Explain that inside the midrib, plant tissues are working hard to transport nutrients throughout the plant.
2. Introduce students to xylem and phloem. Xylem and phloem transport water, minerals, and food throughout the plant. Xylem carries water and minerals from the roots to the leaves. Phloem carries the food prepared by the leaves to different parts of the plant.
3. Divide students into groups of three to four. Have students design an experiment to test how well different leafy greens transport nutrients. Help students identify the control variables: amount of water in each cup, amount and color of dye, and overall attributes and treatment of leaves.
4. Next identify the independent variable, the leafy greens. Have students choose two varieties of leafy greens to compare.
5. Finally, have students identify the dependent variable. It might be the hue of the leaf after several days or how much water has been taken up by the leaf.
6. Have students record their variables on the student worksheet. They will also record observations over time.
7. Invite groups to present their findings and compare results with the class.

Objectives:

In this lesson, students will conduct an experiment to gather evidence in order to understand how plant cells support plant functions. Students will compare how well different leafy greens are able to transport nutrients.

*California Standards:
NGSS: MS-LS1-1, MS-LS1-6*

Rainbow Leaves

Design an experiment to test how well different leafy greens transport nutrients.
Record the variables below. Draw and describe observations over time.

Variables

CONTROL	INDEPENDENT	DEPENDENT
What will stay the same?	What will change?	What will you measure?

Observations

	Drawing	Description
Day _____		<hr/> <hr/> <hr/> <hr/>
Day _____		<hr/> <hr/> <hr/> <hr/>
Day _____		<hr/> <hr/> <hr/> <hr/>

Conclusion

What happened? Why?

virtual



Located in Selinsgrove, Pennsylvania, BrightFarms grows spinach and other leafy greens on a 40,000 gallon indoor pond. In this video produced by True Food TV, viewers will learn about some of the benefits and challenges of growing food hydroponically.



SCAN ME

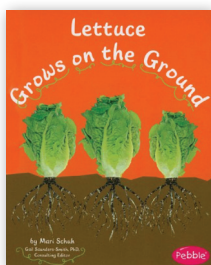
DIG DEEPER

These books, websites, and other resources will help you and your students learn more about leafy greens.

BOOKS

Lettuce Grows on the Ground by Mari Schuh

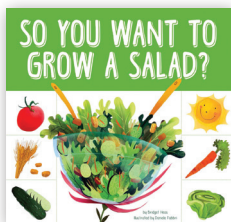
In this colorfully illustrated book, readers learn about lettuce, how it is grown, and other vegetables that grow on the ground. The author introduces plant life cycles in an easy to understand way.



So You Want to Grow A Salad?

written by Bridget Heos and
illustrated by Daniele Fabbri

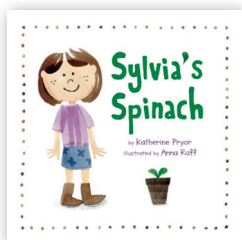
A young girl wants to grow her own salad, discovers where the many ingredients come from, and learns how to grow vegetables. Includes a kid-friendly salad recipe.



Sylvia's Spinach

written by Katherine Pryor
and illustrated by Anna Raff

Sylvia Spivens is a picky eater, until her teacher gives her a packet of spinach seeds to plant for the school garden. With a little help, Sylvia discovers the joy of growing food and the pleasure of tasting something new. Also available in Spanish.



WEBSITES

learnaboutag.org

The California Foundation for Agriculture in the Classroom provides free resources to teachers. The resources highlight many of California's 400 agricultural commodities, including leafy greens.

lgma.ca.gov

The California Leafy Green Marketing Agreement was established in 2007 to assure safe leafy greens for consumers and maintain confidence in food safety programs. Their industry-focused website includes information about traceability, best practices, and updates on food safety issues.

RESOURCES

Lesson Plan: Lettuce Exploration Lesson (Grades K-5)

By Growing Minds

In this lesson, students will use scientific inquiry to observe and learn about several varieties of lettuce. Students will record their results of a taste test by creating a line plot.

Leafy Greens Lessons (Grades 3-5)

By Leafy Greens Council

This set of lessons introduces students to the nutritional benefits of consuming leafy greens. With the help of five dinosaur friends, students will learn ways to include more leafy greens in their diet, while improving their overall health.

Lesson Plan: Lettuce Be Different (Grades K-6)

By Florida Agriculture in the Classroom

In this lesson, students compare their own similarities and differences before growing and comparing several varieties of lettuce. This lesson reinforces ELA, math, and science skills while helping students learn more about ecological variation.

